INTERNAL AUDIT
AUDIT SURVEY
CRITICAL DATA APPLICATIONS

March 4, 2002

Roanoke City Council Audit Committee
Roanoke, Virginia

We have completed a survey of departmentally developed critical data applications. A survey is a process for quickly gathering information without the detailed verification normally required in an audit. This survey was conducted in accordance with generally accepted government auditing standards.

BACKGROUND

In past audits of various city departments, we have noted that employees have the ability to develop powerful applications on their personal computers using desktop software such as Lotus Approach and Microsoft Access. Some departments also create very complex spreadsheets using Lotus 123 or Microsoft Excel. We have noted that some employee-developed spreadsheets and applications were critical to the day-to-day operations of the employee's department.

We became concerned from an organizational perspective about the probability that city operations would be adversely affected if an employee-developed application became inoperable or was lost. While the city does have in-house training on spreadsheets, it does not provide significant training on database programs such as Microsoft Access. The City does not have a protocol for developing database applications; there are no city how-to guides or city training courses on database development available to city employees.

The Institute of Internal Auditors Research Foundation published a study on system auditability and control in 1991 that addressed concerns associated with end user computing. The study noted that many end users are not aware of the traditional development controls followed by technology departments that ensure applications fulfill their purpose, are secure, and operate as intended. Security, backups, redundancy, testing and change control are issues that the average end user would never consider when developing their application. When these and other development issues are not considered in the development of an application, the organization greatly increases the risk that mistakes will occur if it relies on that application. End users can also expend inordinate amounts of time on developing applications that never work when the process that they follow is not sound.

PURPOSE

The purpose of this survey was to prepare a comprehensive inventory of departmentally developed applications and spreadsheets considered critical by management in the departments. This inventory will be used to plan future audit work and to provide DoT with information about how departments are utilizing desktop technology.

SCOPE

The scope of this survey included all city departments, including appointed and constitutional offices as of December 2001. We did not evaluate the stability of any applications identified, nor did we evaluate the controls over the development and use of these applications.

METHODOLOGY

We initially issued a memo to all department managers, constitutional and appointed officers that stated we were going to inventory all departmentally developed applications and complex spreadsheets that were considered critical to the departments. The memo included the following questions for departments:

- System Documentation – is there system documentation that identifies the purpose of the application, its design, and its ongoing development? Are there procedures for using the application, including regular backups?

- Data Security – is the data maintained by the application of a private or confidential nature (employee, customer, citizen data)? Is our use of the data consistent with any agreements made when the data was provided? Is the use of the data compliant with city code, state and federal law? Does the department have appropriate security measures in place given the nature of the data in the system?

- Business Continuity – are all department applications addressed in a business continuity/ disaster recovery plan and are the provisions in the plan being followed?

We then contacted each department and scheduled time with persons that would know about departmentally developed applications and spreadsheets. We visited with departments that had developed spreadsheets and/ or applications and documented their answers to our memo questions. We observed the applications on the PCs and any documentation the departments had, but we did not test any aspect of the applications. We completed a very basic assessment of system documentation, security, and backup procedures based on the complexity and relative significance of individual applications. At the end of our fieldwork we issued memos to each department with suggestions, as needed, based on our assessment of their department.

RESULTS

We identified 27 departments that had spreadsheets, databases, or word processing files that were considered “significant” to their operations.

- Databases = 55
- Spreadsheets = 66
- Word Processing files = 15

We found a wide range of sophistication employed in these applications. Most were simple files used to store static information or used for reference; most did not involve complex programming logic or calculations. We evaluated the complexity of most of these applications to be below a level that would require documentation regarding design and development. There were a small number of applications that involved more complex logic and these did have documentation on their purpose, use, design and development. Again, we did not evaluate the design or function of any of the applications. We did note one finding related to creating regular backups and security.

Finding 01: Backups and Security

In 26 of 136 (19.3%) applications identified, the application and data were not backed up at reasonable, regular intervals. If any of these applications were to become inoperable, the application and the data would have to be recreated manually.

In 3 of 136 (2.2%) applications identified, confidential data contained in the applications was not adequately protected because the applications did not incorporate the use of password protection.

Recommendation 01

We notified each department manager by memo, stating any concerns noted in his or her area of responsibility related to backups and security. We also provided all of our data to the Director of Technology and discussed our concerns with him. The Department of Technology is moving towards further standardization of software that will be supported by the Technology department. This will allow Department of Technology to focus on supporting fewer products at a higher level of expertise. This move will entail revising Administrative Procedure 5.3 “Personal Computer Standards”. The Department of Technology is also developing plans to offer city employees training on Microsoft Access and database development. The Director of Technology believes the DoT Information Center could develop a guide for departments addressing application design and development.

Management’s Response 01

In reviewing the survey results with the auditing staff, I concur with the recommendation made. The survey results reflect the three focus areas that are currently in process within the Department of Technology:

1. Standardization of hardware and software.

2. Education in the use of these products.

3. Policies and procedures updated to reflect standards of use and support of these

products.

As technological tools are provided for employees, they must be used in a way that increases proficiency and, at the same time, minimizes the City's risk and liability. We have been and are working on these areas as part of DoT's commitment to customer service. Much has been accomplished but more is needed to achieve the desired results.

CONCLUSION

Based on the results of our audit work, we believe end user application development is not occurring in the proportions and at a level we had anticipated. We assess the risk that city operations could be significantly impacted by the loss of a departmentally developed application to be minimal. We anticipate end user computing will become more substantial once the Department of Technology fully implements its plans to increase user education and support in the area of database software.

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